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U. S. DEPARTMENT OF AGRICULTURE WEATHER BUREAU

Forecast Division

Washington, D. C., July 15, 1925

WEATHER INFORMATION, FORECASTS AND WARNINGS DISTRIBUTED BY U. S. NAVAL RADIO STATIONS ON THE NORTH ATLANTIC COAST FOR MARINE AND AVIATION INTERESTS

(Effective August 1, 1925)

The Weather Bureau issues daily (Sundays and holidays included) bulletins containing weather reports, forecasts, and warnings for the benefit of marine and aviation interests, which, in cooperation with the Office of Communications, Navy Department, are broadcast from Naval Radio Stations on the north Atlantic coast.

Effective with August 1, 1925, these broadcasts will conform to the provisions of this Circular.

All time referred to herein is 75th meridian.

MAJOR BULLETINS

These bulletins are broadcast from the Arlington, Va., Naval Radio Station (call letters NAA) twice daily, as follows:

Morning bulletin at 10:30 a. m. (1030) (1530 GMT) on a wave length of 2,655 meters (133 KC/s) CW.

Evening bulletin at 10:30 p. m. (2230) (0330 GMT) on a wave length of 2,655 meters (133 KC/s) CW.

The bulletins are divided into two parts and invariably begin with the words "Weather Bureau Bulletin". The first part consists of surface weather conditions based upon observations taken at 8 a. m. and 8 p. m., and upper air data.

Weather reports from ships in the Atlantic Ocean, and during the hurricane season additional ship reports from the Gulf of Mexico and Caribbean Sea, follow the reports from land stations in the first part of the bulletin, as follows:

In the p. m. bulletin.—7 a. m. reports received too late for inclusion in the a. m. bulletin and 7 p. m. reports, both of current day.

In the a. m. bulletin.—7 p. m. reports of previous day received too late for inclusion in p. m. bulletin and 7 a. m. current day reports.

Note.—Ship reports of previous observation included only when conditions are unusual.

The second part of the bulletin consists of a summary of general atmospheric pressure distribution overland and sea, including the locations of "high" and of "low" areas, and the barometer readings at their centers; wind and weather forecasts for Atlantic and Gulf of Mexico offshore areas; storm warnings for these areas; and flying weather forecasts for each of six aviation zones (chart on page 4).

FIRST PART Key-letters and stations

SE	Seattle, Wash.	L	Alpena, Mich.
RO	Roseburg, Oreg.	D	Detroit, Mich.
SF	San Francisco, Calif.	F	Buffalo, N. Y.
DI	San Diego, Calif.	PB	Pittsburgh, Pa.
BS	Boise, Idaho.	LB	Lynchburg, Va.
LD	Lander, Wyo.	AV	Asheville, N. C.
DV	Denver, Colo.	†CO	Columbus, S. C. (Due West).
EP	El Paso, Tex.	AT	Atlanta, Ga.
*ED	Edmonton, Alberta.	TA	Tampa, Fla.
*SC	Swift Current, Sask.	†K	Key West, Fla. (Key West).
BK	Bismarck, N. Dak.	JA	Jacksonville, Fla.
O	Omaha, Nebr.	C	Charleston, S. C.
KC	Kansas City, Mo.	H	Hatteras, N. C.
OK	Oklahoma City, Okla.	†NF	Norfolk, Va. (Hampton Roads).
DA	Dallas, Tex.	†WA	Washington, D. C. (Washington).
GV	Galveston, Tex.	†AC	Atlantic City, N. J. (Lakehurst).
DU	Duluth, Minn.	†NY	New York, N. Y. (Mitchell).
M	Marquette, Mich.	T	Nantucket, Mass.
LC	La Crosse, Wis.	N	Northfield, Vt.
CH	Chicago, Ill.	E	Eastport, Me.
SL	St. Louis, Mo.	*CK	Cochrane, Ont.
CN	Cincinnati, Ohio.	*ML	Montreal, Que.
NV	Nashville, Tenn.	*FP	Father Point, Que.
LR	Little Rock, Ark.	*S	Sydney, N. S.
VK	Vicksburg, Miss.	*J	St. Johns, N. F.
MG	Montgomery, Ala.	*B	Bermuda.
NO	New Orleans, La.	*HT	Horta, Azores.
†P	Pensacola, Fla. (Pensacola).		

*Cloud reports not included.

†Stations with which upper air observations are sent. Such observations, taken in the afternoon, are always included in the 10:30 p. m. bulletin; those taken in the early morning are included in the 10:30 a. m. bulletin when received in time.

The stations are indicated by one or more key-letters which are followed by one or more 5-unit groups of figures. Additional groups containing upper air data are included only in the reports from stations marked with a dagger (†).

The letter "X" will be substituted for any missing or unavailable data.

The location of the aerological stations, the service that conducts them, and the surface stations with which the data are coded are as follows:

Aerological stations	Conducted by	Surface stations, with which upper air reports are included
Mitchell Field, N. Y.	U. S. Army	New York, N. Y.
Lakehurst, N. J.	U. S. Navy	Atlantic City, N. J.
Washington, D. C.	U. S. Weather Bureau	Washington, D. C.
Hampton Roads, Va.	U. S. Navy	Norfolk, Va.
Due West, S. C.	U. S. Weather Bureau	Columbia, S. C.
Pensacola, Fla.	U. S. Navy	Pensacola, Fla.
Key West, Fla.	U. S. Weather Bureau	Key West, Fla.

SECOND PART

The second part of the bulletin is in plain language and consists of a summary of general pressure distribution; wind and weather forecasts for ocean zones (see chart, page 4) storm warnings; and flying forecasts by zones (see chart, page 4).

EXPLANATION OF GROUPS

First group (surface).—*Barometric pressure* reduced to sea-level and expressed in three figures; *wind direction* expressed in one figure; and *wind force* (Beaufort scale) expressed in one figure.

Second group (surface).—*State of weather* expressed in one figure; *barometric tendency* (rise or fall in hundredths of an inch during two hours immediately preceding the observation) expressed in one figure; *past weather* during the preceding 12 hours expressed in one figure; and *current temperature* expressed in two figures.

Third group (clouds).—*Prevailing upper clouds* expressed in one figure; *direction of upper clouds* expressed in one figure; *prevailing lower clouds* expressed in one figure; *direction of lower clouds* expressed in one figure; and *amount of lower clouds* expressed in one figure. Cloud reports are not received from Alaskan, Canadian, foreign, and some United States stations. (See list of key-letters and stations.)

Fourth group (upper air).—Two levels are included in this group, 250 meters and 500 meters. The first figure (4) identifies the group; the second figure indicates the wind direction at the lower elevation, and the third figure the wind force at the lower elevation; the fourth and fifth figures represent, respectively, the wind direction and force at the higher elevation.

Fifth group (upper air).—Includes 1,000 and 1,500 meter elevations; same arrangement of the five significant figures as in the fourth group.

Sixth group (upper air).—Includes 2,000 and 3,000 meter elevations; same arrangement of the five significant figures as in the fourth group.

Seventh group (upper air).—Includes 4,000 meter elevation; same arrangement as in the fourth group, except that there will be only three figures in this group, followed by XX, as elevations in excess of 4,000 meters are reported only in the last group.

Position order will be one less when there is no cloud group.

Last group (upper air).—Shows the highest elevation reached. The first figure (8) identifies the group as the one showing the maximum altitude (it may be the fifth, sixth, seventh, or eighth group, dependent upon the actual elevation reached); the second and third figures indicate the elevation in hundreds of meters; the fourth and fifth figures, wind direction and velocity, respectively, at the indicated elevation. When the maximum elevation is 9,900 meters or more the figures 99 will be used.

KEY TO GROUPS AND EXAMPLES

First group.

Barometric pressure (first three figures of group): Actual pressure in inches and hundredths used, except that the first figure of full reading is omitted. Thus, if the actual corrected pressure is 29.98 inches, the figures 998 are sent, or if the reading is 30.14 inches, the figures 014 are sent.

Direction of surface wind (fourth figure of group).

0=calm, or no movement.	5=south.
1=north.	6=southwest.
2=northeast.	7=west.
3=east.	8=northwest.
4=southeast.	

Force of wind (fifth figure of group): Sent according to Beaufort scale, values 0 to 9, inclusive.

Beaufort scale

Scale No.	Explanatory titles	Miles per hour (statute)	Terms used in forecasts
0.....	Calm	Less than 1	
1.....	Light air	1 to 3	Light.
2.....	Slight breeze	4 to 7	Gentle.
3.....	Gentle breeze	8 to 12	Moderate.
4.....	Moderate breeze	13 to 18	Fresh.
5.....	Fresh breeze	19 to 24	Strong.
6.....	Strong breeze	25 to 31	Gales.
7.....	High wind	32 to 38	
8.....	Gale	39 to 46	
9.....	Strong gale	47 to 54	
*10 (W).....	Whole gale	55 to 62	
*11 (S).....	Storm	64 to 75	Whole gale.
*12 (H).....	Hurricane	Over 75	Hurricane.

*The numeral code does not admit of force in excess of 9 being sent. Therefore, the letters W, S, and H will be used for wind forces 10, 11, and 12, respectively.

NOTE.—The last column gives the terms applicable to the Beaufort scale which are used in the forecasts and warnings issued by the U. S. Weather Bureau.

Example of first group as sent: 99852.

Translation: Barometric pressure, 29.98 inches; wind from south; wind force, 2 (4 to 7 statute miles per hour).

Second group.

Present weather (first figure of group): State of weather at surface at 8 a. m. and 8 p. m.

1=clear (3 tenths or less).	5=snowing.
2=partly cloudy (4 to 7 tenths).	6=thunderstorm.
3=cloudy (8 to 10 tenths).	7=sleet or hailing.
4=raining.	8=dense fog.

Pressure change (second figure of group) in hundredths of inch during two hours preceding observation.

0=change of less than .04 inch.

1=increase of .04.

2=decrease of .04.

3=increase of .06.

4=decrease of .06.

5=increase of .08.

6=decrease of .08.

7=increase of .10.

8=decrease of .10.

†9=increase or decrease of .12 or more.

†Whether it is an increase or decrease can be obtained by barometric tendency at surrounding stations.

Past weather (third figure of group): Information concerning occurrence of thunderstorms, high winds (40 miles per hour or more), and precipitation during the preceding 12 hours.

1=Thunderstorm without high winds and less than .06 inch precipitation.
2=Thunderstorm without high winds and with .06 inch or more precipitation.
3=Thunderstorm with high winds and less than .06 inch precipitation.
4=Thunderstorm with high winds and .06 inch or more precipitation.
5=Precipitation less than .06 inch.
6=Precipitation from .06 to .16 inch, inclusive.
7=Precipitation more than .16 inch.
8=High winds without thunderstorm and without precipitation in excess of .06 inch.
9=High winds without thunderstorm and with precipitation in excess of .06 inch.
0>No precipitation or high winds.

Current temperature (fourth and fifth figures of group): Temperatures are reported in even degrees, Fahrenheit. When the temperature is zero or 100° , the fourth and fifth figures will be 00; when between 2° and 8° , inclusive, the fourth figure will be 0 and the fifth figure the temperature; when below zero, complementary figures will be used (subtract coded temperature sent from 100° to obtain correct temperature). The significant figure 1 is omitted for temperatures of 100° or more. No confusion should arise in determining below zero and above 100° temperatures when the season of the year and the location of the reporting stations are considered.

Examples of temperature coded for stations which may be 100° or more in summer and below zero in winter:

(Duluth) DU 74= 74° in summer and -26° in winter.

(Kansas City) KC 04= 104° in summer and 4° in winter.

(Chicago) CH 00= 100° in summer and zero in winter.

Examples of groups as sent and as translated:

52798: Snowing; pressure change, decrease of .04 inch during preceding two hours; precipitation more than .16 inch; current temperature, -2° .

21374: Partly cloudy weather; pressure change, increase of .04 inch during preceding two hours; thunderstorm with high winds and less than .06 inch precipitation; current temperature, 74° .

Third group.

Upper clouds (first figure of group).

0=1 tenth clouds or less (kind not indicated).

1=Cirrus or cirro-stratus moving slowly.

2=Cirrus or cirro-stratus moving rapidly.

3=Cirro-cumulus or alto-cumulus moving slowly.

4=Cirro-cumulus or alto-cumulus moving rapidly.

5=Alto-stratus moving slowly.

6=Alto-stratus moving rapidly.

Direction of upper clouds (second figure of group).

0=calm, or no movement.

5=south.

1=north. 6=southwest.

2=northeast.

7=west.

3=east.

8=northwest.

4=southeast.

5=Nimbus or cumulo-nimbus moving slowly.

8=Nimbus or cumulo-nimbus moving rapidly.

Lower clouds (third figure of group).

0=1 tenth clouds or less (kind not indicated).

1=Strato-cumulus moving slowly.

2=Strato-cumulus moving rapidly.

3=Cumulus moving slowly.

4=Cumulus moving rapidly.

5=Stratus moving slowly.

6=Stratus moving rapidly.

7=Nimbus or cumulo-nimbus moving slowly.

8=Nimbus or cumulo-nimbus moving rapidly.

Direction of lower clouds (fourth figure of group).

(Same key as for direction of upper clouds.)

Amount of lower clouds (fifth figure of group). Number of tenths of the sky obscured.

0=1 tenth or less of sky covered.

2=2 to 3 tenths of sky covered.

4=4 to 5 tenths of sky covered.

6=6 to 7 tenths of sky covered.

8=8 to 10 tenths of sky covered.

When upper and lower clouds are indicated, the amount of the former can be determined approximately by the difference between the *amount of lower clouds* (fifth figure of third group) and the amount of sky obscured as shown in *state of weather* (first figure of second group).

Example of group as sent: 36244.

Translation: Cirro-cumulus or alto-cumulus moving slowly from the southwest; strato-cumulus moving rapidly from the southeast; and 4 to 5 tenths of sky obscured with lower clouds.

The upper air observations are included in five groups and have identifying numbers 4 to 8, inclusive. The wind direction and force are indicated by the same numerals as for surface wind direction and force.

Fourth group.—(Five figures) 250 and 500 meter levels. The identifying figure for this group is 4, and is always the first figure of the group. The second figure is direction of wind at 250 meters and the third figure is wind force at 250 meters. The fourth figure is wind direction at 500 meters and the fifth figure is wind force at 500 meters.

Example: 45163.

Translation: Observations at 250 and 500 meter levels; wind blowing from south with force 1 (1 to 3 statute miles per hour) at 250 meters; wind blowing from southwest with force 3 (8 to 12 statute miles per hour) at 500 meters.

Fifth group (1,000 and 1,500 meters), **sixth group** (2,000 and 3,000 meters), and **seventh group** (4,000 meters), have the same arrangement as group four, except that group seven will have only three figures followed by XX, the first figure, 5, 6, and 7, respectively, always identifying the group.

Last group.—(highest elevation reached). The first figure (8) identifies the group; the second and third figures indicate the elevation in multiples of 100 meters; the fourth and fifth figures show wind direction and force, respectively, at that elevation.

Examples: (a) 81785, (b) 81954, (c) 89979.

Translation:

(a) Highest elevation reached 1,700 meters; wind blowing from northwest with force 5 (19 to 24 statute miles).

(b) Highest elevation reached, 1,900 meters; wind blowing from south with force 4 (13 to 18 statute miles).

(c) Highest elevation reached, 9,900, or more, meters; wind blowing from west with force 9 (47 to 54 statute miles).

SHIP REPORTS

Ship reports are included in the first part of the bulletin immediately following the land stations. They are included in two groups, preceded by the call letters identifying the ship. The first group consists of five numerals, signifying the ship's position, and the second group of five numerals expressing the barometric pressure, wind direction and force. In the group giving the ship's position (to the nearest degree), the first two numerals express the latitude (north) and the last three the longitude (west).

Example: KSY 33076 07475.

Translation: S. S. Broad Arrow; latitude 33 degrees north; longitude (0)76 degrees west. Barometric pressure 30.74 inches; wind direction west; wind force of 5 (19 to 24 miles per hour).

LOCAL SCHEDULES

The table below shows additional Naval Radio Stations from which localized broadcasts are made daily (including Sundays and holidays); their call letters; transmitting wave lengths; the information broadcast therefrom; the hours of distribution (75th meridian time); and the Weather Bureau stations from which the forecasts and information are supplied.

Whenever storm warnings are issued in the forenoon they are broadcast at the same time as the wind and weather forecasts. When issued in the afternoon or at night, they are broadcast at the evening hours indicated.

Ships may request any station listed herein to furnish the latest weather forecasts and warnings and weather reports.

Storm warnings are displayed at 205 points on the Atlantic and Gulf of Mexico coasts of the United States. Flags are used by day and lanterns by night.

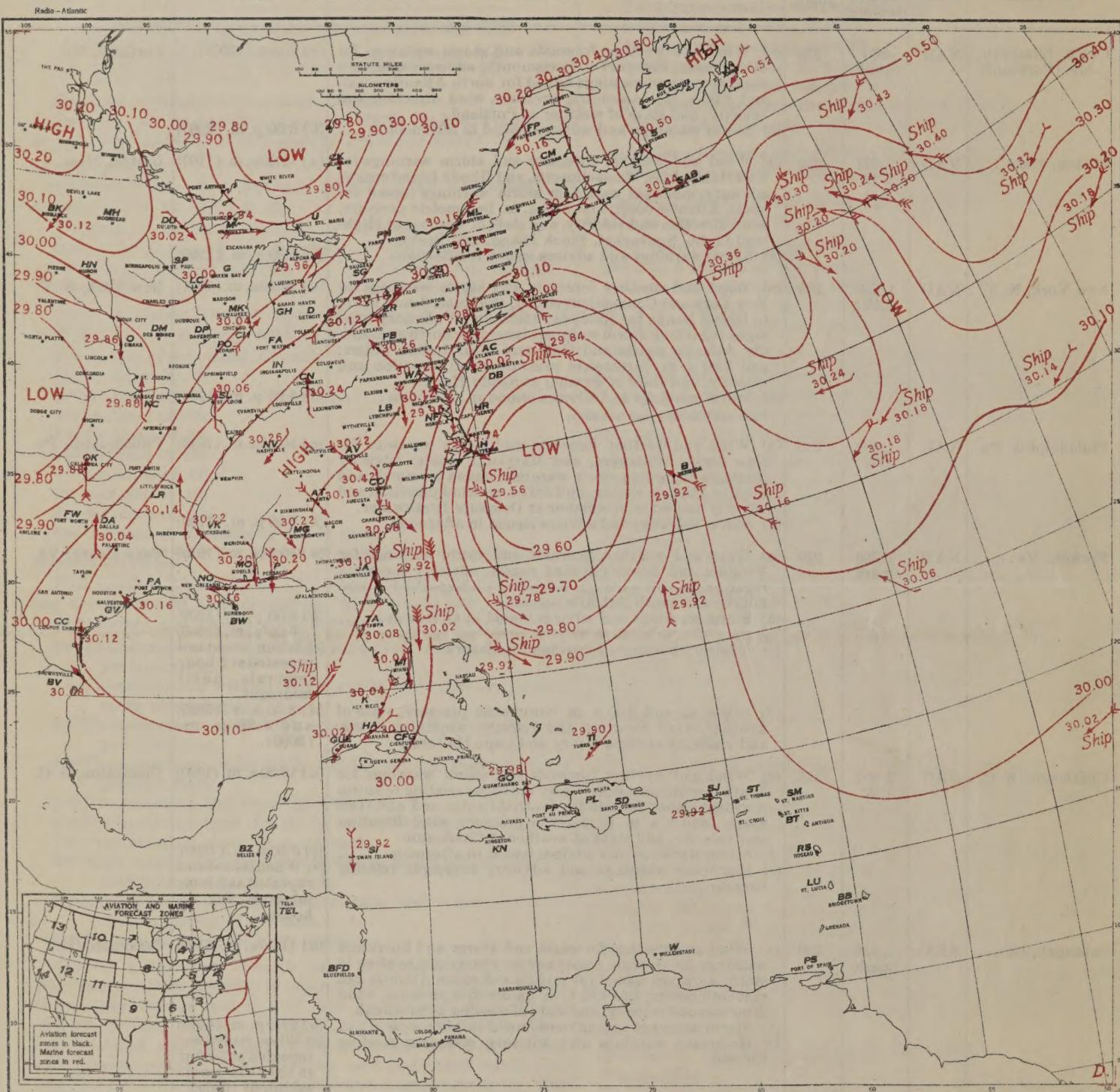
Cards descriptive of storm signals and a copy of this circular will be furnished free if application is made to any U. S. Weather Bureau office on the Atlantic or Gulf coasts.

Naval Radio Stations				Weather information broadcast (Daily, Sundays, and holidays included)	Hour of broadcasting (75th meridian time)	Stations issuing information
Location	Call	Wave length (meters)	Kilo- cycles			
Cape Elizabeth, Me. (Portland).	NAB	800 Spark	875	(a) Wind and weather forecasts and storm warnings for Maine coast, Eastport to Portsmouth; advisory messages regarding storm warnings issued for north Atlantic coast; and 8:00 a. m. barometric pressure, wind direction and velocity, and state of weather at Portland. (b) Storm warnings and advices issued in afternoon	(a) Noon (1200).... (b) 8:00 p. m. (2000)	Portland, Me.
Boston, Mass.....	NAD	1,363 CW	220	(a) Wind and weather forecasts and storm warnings for New Hampshire, Massachusetts, and Rhode Island coasts; advisory messages regarding storm warnings issued for north Atlantic coast; and 8:00 a. m. barometric pressure, wind direction and velocity, and state of weather at Highland Light, Nantucket, Block Island, and Boston. (b) Storm warnings and advices issued in afternoon	(a) 11:00 a. m. (1100) (b) 5:00 p. m. (1700)	Boston, Mass.
New York, N. Y..	NAH	1,538 CW	195	(a) Wind and weather forecasts and storm warnings for New York and Connecticut coasts; (forecasts Sandy Hook to Grand Banks for European steamers*); advisory messages regarding storm warnings issued for north and middle Atlantic coasts and Gulf and West Indian waters; and 8:00 a. m. barometric pressure, wind direction and velocity, and state of weather at Sandy Hook. (b) Storm warnings and advices issued in afternoon	(a) 10:30 a. m. (1030) (b) 5:00 p. m. (1700)	New York, N. Y.
Philadelphia, Pa..	NAI	1,304 CW	230	(a) Wind and weather forecasts and storm warnings for New Jersey, Delaware, and Maryland coasts; advisory messages regarding storm warnings issued for north and middle Atlantic coasts; and 8:00 a. m. wind direction and velocity, and state of weather at Delaware Breakwater. (b) Storm warnings and advices issued in afternoon	(a) 10:45 a. m. (1045) (b) 5:00 p. m. (1700)	Philadelphia, Pa.
Norfolk, Va.....	NAM	1,363 Spark	220	(a) Wind and weather forecasts and storm warnings for Virginia and North Carolina coasts; advisory messages regarding storm warnings issued for Chesapeake Bay and middle and south Atlantic coasts. (b) Storm warnings and advices issued in afternoon	(a) 10:45 a. m. (1045) (b) 4:00 p. m. (1600) (c) When issued and repeated at 2-hour intervals until midnight. (d) 8:30 a. m. (0830) and 8:30 p. m. (2030).	Cape Henry, Va.
Charleston, S. C..	NAO	2,607 CW	115	(a) Wind and weather forecasts and storm warnings for South Carolina coast; advisory messages relating to storm warnings issued for middle, south Atlantic, and east Gulf coasts; and 8 a. m. barometric pressure, wind direction and velocity, and state of weather at Charleston. (b) Storm warnings and advices issued in afternoon	(a) 10:30 a. m. (1030) (b) 6:00 p. m. (1800) (c) When issued and repeated at 2-hour intervals for 24 hours.	Charleston, S. C.
Savannah, Ga ...	NEV	1,428 Spark	210	(a) Wind and weather forecasts and storm and hurricane warnings for Georgia coast; advisory messages relating to storm warnings issued for middle and south Atlantic and east Gulf coasts; and 8:00 a. m. barometric pressure, wind direction and velocity, and state of weather at Savannah. (b) Storm warnings and advices issued in afternoon	(a) 11:00 a. m. (1100) (b) 6:00 p. m. (1800) (c) When issued and repeated at 2-hour intervals until midnight (0000).	Savannah, Ga.
St. Augustine, Fla.	NAP	2,842 Spark	128	(a) Wind and weather forecasts and storm warnings for east Florida coast, Jacksonville to Miami; advisory messages relating to storm warnings issued for middle and south Atlantic and east Gulf coasts; and 8:00 a. m. barometric pressure, wind direction and velocity, and state of weather at Jacksonville and Titusville. (b) Storm warnings and advices when issued in afternoon. (c) Hurricane warnings and advisory messages relating thereto.	(a) 11:30 a. m. (1130) (b) When issued. (c) When issued and repeated at 2-hour intervals until 6:00 p. m. (1800).	Jacksonville, Fla.
Jupiter, Fla.....	NAQ	1,804 Spark	230	(a) Wind and weather forecasts and storm warnings for east coast of Florida, Miami to Key West; advisory messages relating to storm warnings issued for the middle and south Atlantic and east Gulf coasts; and 8:00 a. m. barometric pressure, wind direction and velocity, and state of weather at Miami. (b) Storm warnings and advices issued in afternoon	(a) 11:30 a. m. (1130) (b) 6:00 p. m. (1800) (c) When issued and repeated at 2-hour intervals until midnight (0000).	Jacksonville, Fla.

NOTE.—This Circular supersedes Circulars dated May 16, 1921, May 28, 1921, and August 1, 1924.
For distribution from radio stations at Key West, Pensacola, New Orleans, Port Arthur, Galveston, Brownsville, Guantanamo, San Juan, and Almirante, Panama, see Circular dated August 1, 1926, No. 14—Radio.

For Pacific coast distribution see Circular No. 10, May 15, 1925 (Second Edition).

CHART SHOWING HOW WEATHER REPORTS BROADCAST IN MAJOR BULLETINS MAY BE ENTERED
AND USED IN THE PREPARATION OF WEATHER MAPS AT SEA



This map shows conditions that obtained in the a. m. of March 6, 1925, and is made up of data distributed by radio. Three elements are shown (in red) for each station and ship: Barometric pressure in inches, indicated by figures; wind direction, shown by arrow which flies with the wind; and wind force (Beaufort scale), indicated by the number of feathers on the arrow. The red lines are isobars that pass through points having equal barometric pressure, and were drawn from inspection after the pressure values were entered. The centers of areas of low pressure are indicated by the word LOW and centers of high pressure by the word HIGH.

In the Northern Hemisphere winds blow spirally inward, counter-clockwise, toward and around the center of a LOW, while from the center of a HIGH they blow spirally outward in a direction similar to that described by the hands of a clock. The steeper the pressure gradient (that is, the closer the isobars are together) the higher are the wind velocities.

Copies of this base chart (size, $16\frac{3}{4}$ by 17 inches) will be supplied free to vessel masters who regularly take and forward weather observations to the U. S. Weather Bureau, or to the Hydrographic Office, U. S. Navy.